Exhibit A
Work Statement

TECHNICAL TASK LIST

Task #	CPR	Task Name
1		Administration and Reporting
2		Host Site Agreement
3		Design, Engineering, and Fabrication
4		Laboratory Validation
5		Field Unit Installation and Shakedown
6	X	Data Collection, Processing, and Analysis
7	X	Design Commercial Packages for Other Applications
8		Technology Transfer Activities
9		Production Readiness Plan

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor	Key Partner(s)
1	David Cygan – Gas Technology Institute	None	None
2	David Cygan – Gas Technology Institute	B2U Solar	None
3	David Cygan – Gas Technology Institute	B2U Solar	SAB Miller
4	David Cygan – Gas Technology Institute	B2U Solar	None
5	David Cygan – Gas Technology Institute	B2U Solar	SAB Miller
6	David Cygan – Gas Technology Institute	B2U Solar	SAB Miller
7	David Cygan – Gas Technology Institute	B2U Solar	None
8	David Cygan – Gas Technology Institute	B2U Solar	None
9	David Cygan – Gas Technology Institute	B2U Solar	None

GLOSSARY

Specific terms and acronyms used throughout this scope of work are defined as follows:

Term/ Acronym	Definition
B2U	B2U Solar, a California solar equipment manufacturer
C	Celsius
CLFR	Compact Linear Fresnel Reflectors
CPR	Critical Project Review
Energy Commission	California Energy Commission
F	Fahrenheit
FTA	Field Trial Agreement
GTI	Gas Technology Institute
HVAC	Heating Ventilating and Air Conditioning
LCOE	Levelized Cost of Energy
PIER	Public Interest Energy Research
RD&D	Research, Development and Demonstration
XCPC	External Compound Parabolic Concentrator

Problem Statement:

The term “solar thermal” is used to refer to a variety of different technologies. For the most part, commercially available flat plate and evacuated tube collectors exhibit good efficiency characteristics at lower temperatures (176° Fahrenheit (F)/80° Celsius (C)) but heat losses mean that their efficiencies fall off rapidly at higher temperatures (212°F/100°C). The other end of the solar thermal temperature range (392°F/200°C to over 1200°F/650°C) uses parabolic troughs, compact linear Fresnel reflectors (CLFR) and power towers for large scale power generation installations.

The temperature spectrum between about 212°F/100°C and 392°F/200°C has been largely neglected by market incumbents and will be uniquely addressed by the subject technology. This range includes a wide variety of compelling heat driven industrial process applications including absorption chilling, boiler feedwater, industrial drying, and commercial hot water. This external compound parabolic concentrator (XCPC) technology pairs an evacuated tube solar collector with a non-tracking external non-imaging reflector to produce temperatures in this heat for process applications.

XCPC solar thermal technology has been proven to work effectively in the medium temperature range, but the major barrier that hinders quick market awareness and adoption is lack of demonstration of industrial applications with evidence of proposed value.

Goals of the Agreement:

The goal of this Agreement is to bridge the proven XCPC solar thermal technology with appropriate industrial applications to replace fossil fuels with clean and cost-effective solar energy.

Objectives of the Agreement:

The specific objectives of this project are:

- To prove the feasibility and safety of implementing medium temperature solar energy to meet a variety of industrial needs.
- To prove the possibility of installing a medium temperature solar thermal system at a cost less than $0.38/W to as low as $0.27/W.
- To prove that the XCPC solar thermal technology can achieve the Levelized Cost of Energy (LCOE) at less than $0.032/kWh to as low as $0.021/kWh.

TASK 1 ADMINISTRATION

Task 1.1 Attend Kick-off Meeting

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement.

The Recipient shall:

- Attend a “Kick-Off” meeting with the Commission Project Manager, the Grants Officer, and a representative of the Accounting Office. The Recipient shall bring its Project Manager, Agreement Administrator, Accounting Officer, and others designated by the Commission Project Manager to this meeting. The administrative and technical aspects of this Agreement will be discussed at the meeting. Prior to the kick-off meeting, the Commission Project Manager will provide an agenda to all potential meeting participants.

  The administrative portion of the meeting shall include, but not be limited to, the following:
  - Discussion of the terms and conditions of the Agreement
  - Discussion of Critical Project Review (Task 1.2)
  - Match fund documentation (Task 1.6)
  - Permit documentation (Task 1.7)

  The technical portion of the meeting shall include, but not be limited to, the following:
  - The Commission Project Manager’s expectations for accomplishing tasks described in the Scope of Work
  - An updated Schedule of Products
  - Discussion of Progress Reports (Task 1.4)
  - Discussion of Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions)
  - Discussion of the Final Report (Task 1.5)

The Commission Project Manager shall:

- Designate the date and location of this meeting.

Recipient Products:

- Updated Schedule of Products (no draft)
- Updated List of Match Funds (no draft)
- Updated List of Permits (no draft)

Commission Project Manager Product:

- Kick-Off Meeting Agenda (no draft)

Task 1.2 Critical Project Review (CPR) Meetings

The goal of this task is to determine if the project should continue to receive Energy Commission funding to complete this Agreement and to identify any needed modifications to the tasks, products, schedule or budget.

CPRs provide the opportunity for frank discussions between the Energy Commission and the Recipient. CPRs generally take place at key, predetermined points in the Agreement, as determined by the Commission Project Manager and as shown in the

Technical Task List above. However, the Commission Project Manager may schedule additional CPRs as necessary, and any additional costs will be borne by the Recipient.

Participants include the Commission Project Manager and the Recipient and may include the Commission Grants Officer, the Public Interest Energy Research (PIER) Program Team Lead, other Energy Commission staff and Management as well as other individuals selected by the Commission Project Manager to provide support to the Energy Commission.

The Commission Project Manager shall:

- Determine the location, date, and time of each CPR meeting with the Recipient. These meetings generally take place at the Energy Commission, but they may take place at another location.
- Send the Recipient the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.
- Conduct and make a record of each CPR meeting. One of the outcomes of this meeting will be a schedule for providing the written determination described below.
- Determine whether to continue the project, and if continuing, whether or not modifications are needed to the tasks, schedule, products, and/or budget for the remainder of the Agreement. Modifications to the Agreement may require a formal amendment (please see the Terms and Conditions). If the Commission Project Manager concludes that satisfactory progress is not being made, this conclusion will be referred to the Energy Commission's Research, Development and Demonstration (RD&D) Policy Committee for its concurrence.
- Provide the Recipient with a written determination in accordance with the schedule. The written response may include a requirement for the Recipient to revise one or more product(s) that were included in the CPR.

The Recipient shall:

- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall include recommendations and conclusions regarding continued work of the projects. This report shall be submitted along with any other products identified in this scope of work. The Recipient shall submit these documents to the Commission Project Manager and any other designated reviewers at least 15 working days in advance of each CPR meeting.
- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

Commission Project Manager Products:

- Agenda and a list of expected participants (no draft)
- Schedule for written determination (no draft)
- Written determination (no draft)

Recipient Product:

- CPR Report(s) (no draft)

Task 1.3 Final Meeting

The goal of this task is to closeout this Agreement.

The Recipient shall:

- Meet with Energy Commission staff to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement.

  This meeting will be attended by, at a minimum, the Recipient, the Commission Grants Office Officer, and the Commission Project Manager. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be two separate meetings at the discretion of the Commission Project Manager.

  The technical portion of the meeting shall present an assessment of the degree to which project and task goals and objectives were achieved, findings, conclusions, recommended next steps (if any) for the Agreement, and recommendations for improvements. The Commission Project Manager will determine the appropriate meeting participants.

  The administrative portion of the meeting shall be a discussion with the Commission Project Manager and the Grants Officer about the following Agreement closeout items:
  - o What to do with any equipment purchased with Energy Commission funds (Options)
  - o Energy Commission's request for specific "generated" data (not already provided in Agreement products)
  - o Need to document Recipient's disclosure of "subject inventions" developed under the Agreement
  - o "Surviving" Agreement provisions, such as repayment provisions and confidential Products
  - o Final invoicing and release of retention
  - o Prepare a schedule for completing the closeout activities for this Agreement

Products:

- Written documentation of meeting agreements (no draft)
- Schedule for completing closeout activities (no draft)

Task 1.4 Monthly Progress Reports

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the research objectives of this Agreement on time and within budget.

The objectives of this task are to summarize activities performed during the reporting period, to identify activities planned for the next reporting period, to identify issues that may affect performance and expenditures, and to form the basis for determining whether invoices are consistent with work performed.

The Recipient shall:

- Prepare a Monthly Progress Report which summarizes all Agreement activities conducted by the Recipient for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due to the Commission Project Manager within 10 days of the end of the reporting period. The recommended specifications for each progress report are contained in Exhibit A, Attachment A-2.

Product:

- Monthly Progress Reports (no draft)

Task 1.5 Final Report

The goal of the Final Report is to assess the project's success in achieving its goals and objectives, advancing science and technology, and providing energy-related and other benefits to California.

The objectives of the Final Report are to clearly and completely describe the project's purpose, approach, activities performed, results, and advancements in science and technology; to present a public assessment of the success of the project as measured by the degree to which goals and objectives were achieved; to make insightful observations based on results obtained; to draw conclusions; and to make recommendations for further RD&D projects and improvements to the PIER project management processes.

The Final Report shall be a public document. If the Recipient has obtained confidential status from the Energy Commission and will be preparing a confidential version of the Final Report as well, the Recipient shall perform the following activities for both the public and confidential versions of the Final Report.

The Recipient shall:

- Prepare an Outline of the Final Report.
- Prepare a Final Report following the approved outline and the latest version of the PIER Final Report guidelines published on the Energy Commission's website at ***http://www.energy.ca.gov/contracts/pier/contractors/index.html*** at the

time the Recipient begins performing this task, unless otherwise instructed in writing by the Commission Project Manager. Instead of the timeframe listed in the Product Guidelines located in Section 5 of the Terms and Conditions, the Commission Project Manager shall provide written comments on the Draft Final Report within fifteen (15) working days of receipt. The Final Report must be completed on or before the end of the Agreement Term.

- Submit one bound copy of the Final Report with the final invoice.

Products:

- Draft Outline of the Final Report
- Final Outline of the Final Report
- Draft Final Report
- Final Report

Task 1.6 Identify and Obtain Matching Funds

The goal of this task is to ensure that the match funds planned for this Agreement are obtained for and applied to this Agreement during the term of this Agreement.

The costs to obtain and document match fund commitments are not reimbursable through this Agreement. Although the PIER budget for this task will be zero dollars, the Recipient may utilize match funds for this task. Match funds shall be spent concurrently or in advance of PIER funds for each task during the term of this Agreement. Match funds must be identified in writing and the associated commitments obtained before the Recipient can incur any costs for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a letter documenting the match funding committed to this Agreement and submit it to the Commission Project Manager at least 2 working days prior to the kick-off meeting. If no match funds were part of the proposal that led to the Energy Commission awarding this Agreement and none have been identified at the time this Agreement starts, then state such in the letter. If match funds were a part of the proposal that led to the Energy Commission awarding this Agreement, then provide in the letter a list of the match funds that identifies the:
    - Amount of each cash match fund, its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied
    - Amount of each in-kind contribution, a description, documented market or book value, and its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient shall identify its owner and provide a contact name, address and telephone number, and the

address where the property is located

- Provide a copy of the letter of commitment from an authorized representative of each source of cash match funding or in-kind contributions that these funds or contributions have been secured.
- Discuss match funds and the implications to the Agreement if they are reduced or not obtained as committed, at the kick-off meeting. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide the appropriate information to the Commission Project Manager if during the course of the Agreement additional match funds are received.
- Notify the Commission Project Manager within 10 days if during the course of the Agreement existing match funds are reduced. Reduction in match funds must be approved through a formal amendment to the Agreement and may trigger an additional CPR.

Products:

- A letter regarding match funds or stating that no match funds are provided (no draft)
- Copy(ies) of each match fund commitment letter(s) (if applicable) (no draft)
- Letter(s) for new match funds (if applicable) (no draft)
- Letter that match funds were reduced (if applicable) (no draft)

Task 1.7 Identify and Obtain Required Permits

The goal of this task is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement. Although the PIER budget for this task will be zero dollars, the Recipient shall budget match funds for any expected expenditures associated with obtaining permits. Permits must be identified in writing and obtained before the Recipient can make any expenditures for which a permit is required.

The Recipient shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the Commission Project Manager at least 2 working days prior to the kick-off meeting. If there are no permits required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, provide in the letter:
  - A list of the permits that identifies the:
    - Type of permit
    - Name, address and telephone number of the permitting

jurisdictions or lead agencies

- The schedule the Recipient will follow in applying for and obtaining these permits.
- Discuss the list of permits and the schedule for obtaining them at the kick-off meeting and develop a timetable for submitting the updated list, schedule and the copies of the permits. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the Progress Reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, provide the appropriate information on each permit and an updated schedule to the Commission Project Manager.
- As permits are obtained, send a copy of each approved permit to the Commission Project Manager.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the Commission Project Manager within 10 days. Either of these events may trigger an additional CPR.

Products:

- Letter documenting the permits or stating that no permits are required (no draft)
- A copy of each approved permit (if applicable) (no draft)
- Updated list of permits as they change during the term of the Agreement (if applicable) (no draft)
- Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable) (no draft)

TECHNICAL TASKS

Task 2: Host Site Agreement

The goal of this task is to secure a commitment from a California host site for field demonstration of the XCPC solar thermal technology. A host site has been identified as SAB Miller Brewing located in Irwindale, California.

The Recipient shall:

- Conduct a site visit to assess the current site conditions required to successfully complete the system design, installation, permitting, and integration with the site's current infrastructure.
- Initiate negotiations of a Field Trial Agreement (FTA) that defines the rights and responsibilities of GTI, partners, subcontractors, and the host site operator during the field demonstration period. Major topics covered by the FTA include:
    - Period of performance
    - Responsibilities
    - Charges or costs

- Tracking of co-funding
- Access
- Ownership of system, warranty, indemnification, and limitation of liability
- Publication
- Force majeure, termination, and governing law.

- Complete negotiations and draft the FTA.
- Prepare a Notification Letter regarding completion of negotiations with the host site. The letter will include, but not be limited to, documentation that the selected host site has agreed to all the terms and conditions in the FTA, and will include a copy of the signed FTA.

Products:

- Notification Letter (no draft)
- Copy of signed FTA (no draft)

Task 3: Design, Engineering, and Fabrication

The goal of this task is to design and fabricate a commercial size XCPC solar thermal system for the host site in California. Fabrication will be carried out by our commercialization partner, B2U Solar.

The Recipient shall:

- Determine key design parameters.
- Design a new process to combine solar with existing heat sources.
- Conduct a computerized simulation.
- Prepare drawing and design notes on solar thermal system
- Prepare performance and safety estimation on solar thermal system

Products:

- Drawing and design notes (no draft)
- System performance and safety estimation (no draft)

Task 4: Laboratory Validation

The goal of this task is to implement the approach on a laboratory boiler at GTI. The standardized procedures for a small batch of panel assembly, installation, and system connection will be investigated, according to application needs.

The Recipient shall:

- Establish a preliminary installation procedure
- Standardize the production process
- Standardize the installation procedure
- Prepare a list of permits, parts, and tools for installation

- Prepare a written installation procedure System specs and quality assurance/quality control
- Prepare written guidelines on

Products:

- List of permits, parts, and tools (no draft)
- System specs and quality assurance/quality control guidelines (no draft)
- Installation procedure (no draft)

Task 5: Field Unit Installation and Shakedown

The goal of this task is to complete the installation of the XCPC solar thermal system at the selected host site. The standardized production and installation procedures developed earlier will be used to prepare for mass panel installation.

The Recipient shall:

- Complete and submit building applications and permits for the installation of the XCPC solar thermal system at the host site.
- Conduct a site visit and meet with the installation contractor prior to beginning installation of equipment.
- Supervise the installation of the XCPC solar thermal system and all auxiliary equipment required per the installation specifications.
- Prepare a Notification Letter on Installation. This letter will include, but not be limited to a summary of the work done in this task and a confirmation the installation has been successfully completed.
- Verify that target installation costs are met.

Products:

- Notification Letter on Installation (no draft)

Task 6: Data Collection, Processing, and Analysis

The goal of this task is to validate the field performance of the XCPC solar thermal system via a comprehensive testing program at the selected host site. GTI will start and monitor the routine operations of using solar thermal in Miller's brewing processes.

The Recipient shall:

- Conduct all required system shakedowns, baseline check-ups and calibrations including calibration and verification of data acquisition equipment.
- When appropriate, provide a Notification Letter instructing the Energy commission project manager that the XCPC solar thermal system field demonstration unit is ready for testing.
- Collect operations data.
- Identify any issues related to the solar system.
- Analyze field test results and determine if LCOE objectives have been met.

- Service and maintain the XCPC solar thermal system during the data collection period.
- Analyze system reliability.
- Investigate operational issues related to the solar system.
- Finalize maintenance, repair, and operations menus.
- Prepare a Task Summary Report that includes the field test plan, summarizes the demonstration site results, and contains feedback from the host site.
- Participate in a CPR as per Task 1.2.

Products:

- Notification Letter of readiness for performance testing (no draft)
- Task Summary Report on operation of the XCPC solar thermal system (no draft)

Task 7: Design Commercial Packages for Other Applications

The goal of this task is to design systems that can be implemented to other solar thermal applications, such as commercial heating, ventilating, and air conditioning (HVAC), boiler augmentation, and industrial process heating.

The Recipient shall:

- Integrate solar panels scheme to each application
- Estimate performance, cost, and energy saving
- Participate in a CPR as per Task 1.2 (if necessary)
- Prepare a system design that can be implemented to other solar thermal applications
- Prepare a written performance estimate

Products:

- System design (no draft)
- Performance estimate (no draft)

Task 8: Technology Transfer Activities

The goal of this task is to develop a plan to make the knowledge gained, experimental results, and lessons learned available to key decision-makers. The project team shall prepare a Technology Transfer Plan explaining how the knowledge gained in this project will be made available to the public, and conduct technology transfer activities in accordance with the Technology Transfer Plan.

The Recipient shall:

- Prepare a Technology Transfer Plan. The plan shall explain how the knowledge gained in this project will be made available to the public. The level of detail expected is at minimum for research-related projects and highest for demonstration projects. Key elements from this report shall be included in the Final Report for this project.

- Conduct technology transfer activities in accordance with the Technology Transfer Plan. These activities shall be reported in the Monthly Progress Reports.

Products:

- Draft Technology Transfer Plan
- Final Technology Transfer Plan

Task 9: Production Readiness Plan

The goal of the plan is to determine the steps that will lead to the manufacturing of the technologies developed in this project or to the commercialization of the project's results.

The Recipient shall:

- Prepare a Production Readiness Plan. The degree of detail in the Production Readiness Plan discussion should be proportional to the complexity of producing or commercializing the proposed product and its state of development. The plan shall include, as appropriate, but not be limited to:
  - Identification of critical production processes, equipment, facilities, personnel resources, and support systems that will be needed to produce a commercially viable product.
  - Internal manufacturing facilities, as well as supplier technologies, capacity constraints imposed by the design under consideration, identification of design critical elements and the use of hazardous or non-recyclable materials. The product manufacturing effort may include "proof of production processes."
  - A projected "should cost" for the product when in production.
  - The expected investment threshold to launch the commercial product.
  - An implementation plan to ramp up to full production.

Products:

- Draft Production Readiness Plan
- Final Production Readiness Plan